

Product: VIBRATORY COMPACTOR

Model: CP-563D VIBRATORY COMPACTOR 5LZ

Configuration: CP-563D CS-563D Vibratory Compactors 5LZ00001-UP (MACHINE) POWERED BY 3116 Engine

Disassembly and Assembly

446 and 446B Backhoe Loaders, Lexion 450 Combine, 3114 and 3116 Engines, IT18F Integrated Toolcarrier, D6M Track-Type Tractor and 928F, 950F and 950G Wheel Loaders

Media Number -SEN3611-18

Publication Date -01/05/2009

Date Updated -27/05/2009

i01928381

Governor - Remove

SMCS - 1264-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	136-4149	Governor Pliers ⁽¹⁾	1

⁽¹⁾ This tool is part of the **128-8822** Fuel System and Governor Tool Group.

Start By:

- a. Remove the fuel shutoff solenoid. Refer to Disassembly and Assembly, "Fuel Shutoff Solenoid - Remove and Install".

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

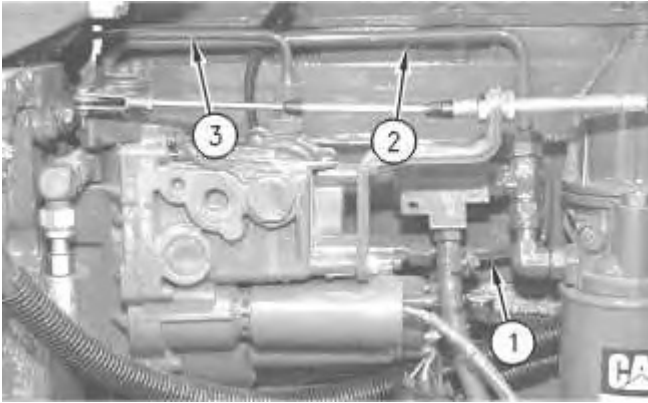


Illustration 1

g00613041

1. Disconnect the governor control cable.
2. Remove oil tube assembly (1). Remove tube assembly (2) and tube assembly for fuel ratio control (3), if equipped. Plug and cap all connections.



Illustration 2

g00613071

3. Remove clip (4).
-

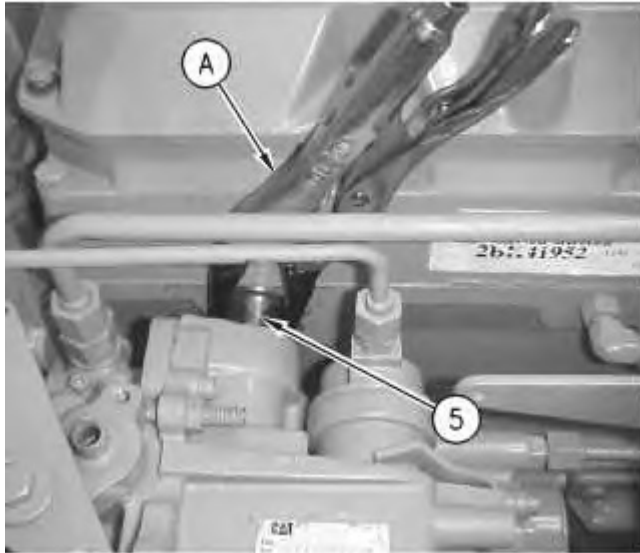


Illustration 3

g00655975

4. Use Tooling (A) to slide tube assembly (5) into the cylinder head.

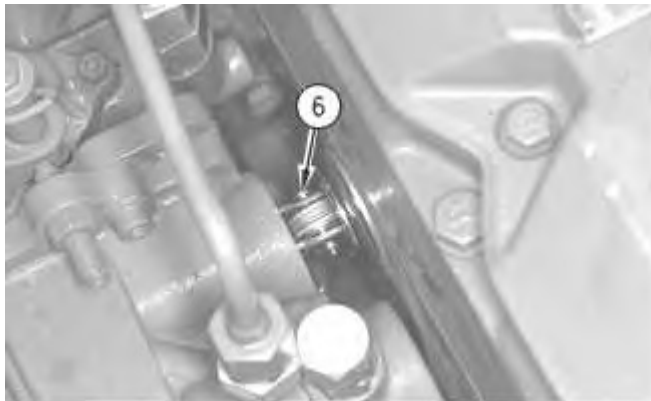


Illustration 4

g00613149

5. Remove the clip and use Tooling (A) to remove the clevis pin (6).

Note: Clevis pin (6) must stay with the governor in order to be adjusted.

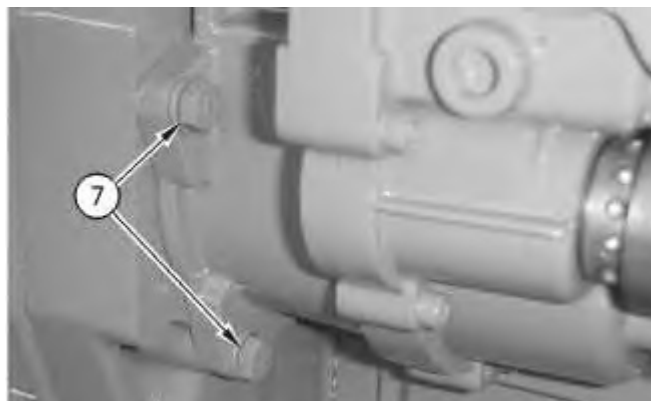


Illustration 5

g00613563

6. Remove bolts (7) and the washers that hold the governor in position.



Illustration 6

g00673182

7. Remove the governor from the engine.

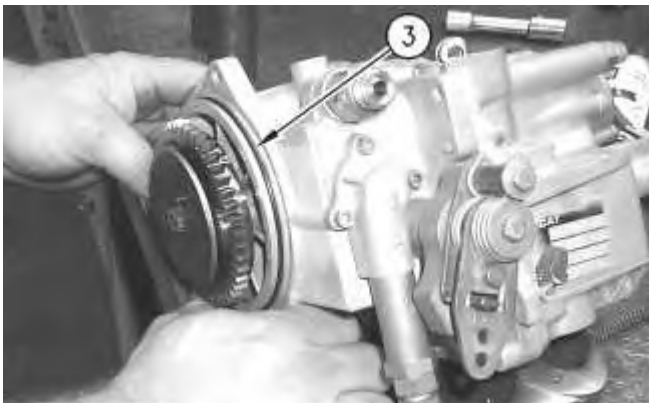


Illustration 7

g00673180

8. Remove O-ring seal (3) on the governor.

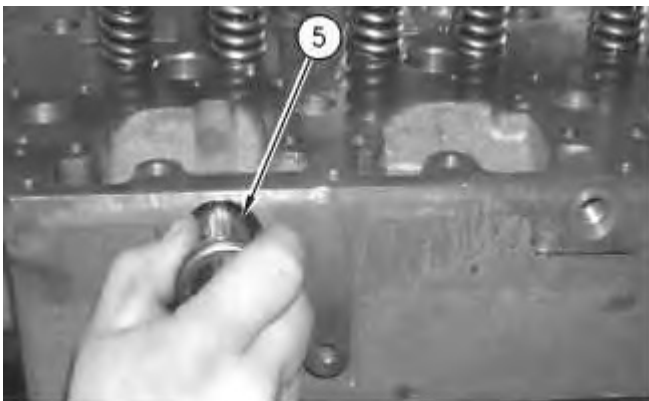


Illustration 8

g00672742

9. Remove the O-ring seal and tube assembly (5) from the cylinder head.

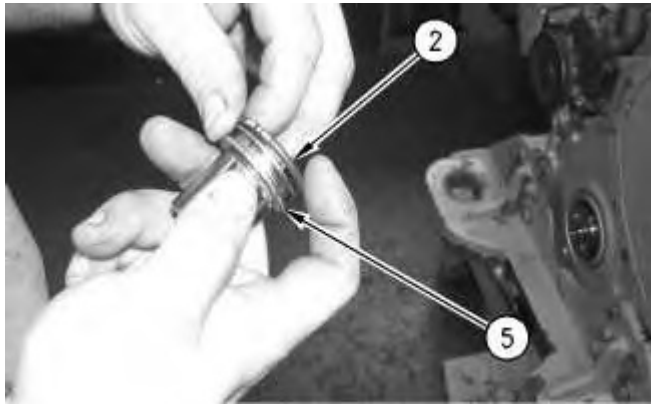


Illustration 9

g00672733

10. Remove O-ring seal (2) on the tube assembly (5).

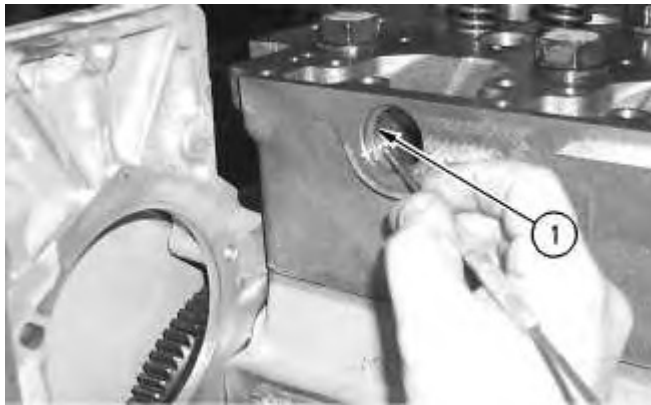


Illustration 10

g00673178

11. Remove O-ring seal (1) from the cylinder head.

Note: For more information on the governor, refer to Service Manual, SENR6454, "3114, 3116, & 3126 Engine Governors". The Service Manual, SENR6454 requires the use of a **1U-7326** Governor Calibration Bench. For information on reusability of components in the governor, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8434, "3100 Governor Inspection and General Information for Mechanical Governor Groups Used in 3114, 3116, and 3126 Engines Equipped with Mechanical Unit Injectors (MUI)".

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446 and 446B Backhoe Loaders, Lexion 450 Combine, 3114 and 3116 Engines, IT18F Integrated Toolcarrier, D6M Track-Type Tractor and 928F, 950F and 950G Wheel Loaders

Media Number -SEN3611-18

Publication Date -01/05/2009

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i01928419

Governor - Install

SMCS - 1264-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	136-4149	Governor Pliers ⁽¹⁾	1
B	128-8827	Pin ⁽¹⁾	1
	1U-7523	Pin Pilot ⁽¹⁾	1

⁽¹⁾ This tool is part of the **128-8822** Governor Tool Group.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: For more information on the governor, refer to Service Manual, SENR6454, "3114, 3116, & 3126 Engine Governors". The Service Manual, SENR6454 requires the use of a **1U-7326** Governor Calibration Bench. For information on reusability of components in the governor, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8434, "3100 Governor Inspection and General Information for Mechanical Governor Groups Used in 3114, 3116, and 3126 Engines Equipped with Mechanical Unit Injectors (MUI)".



Illustration 1

g00673178

1. Apply lubricant to the new O-ring seal (1). Install new O-ring seal (1) in the cylinder head.

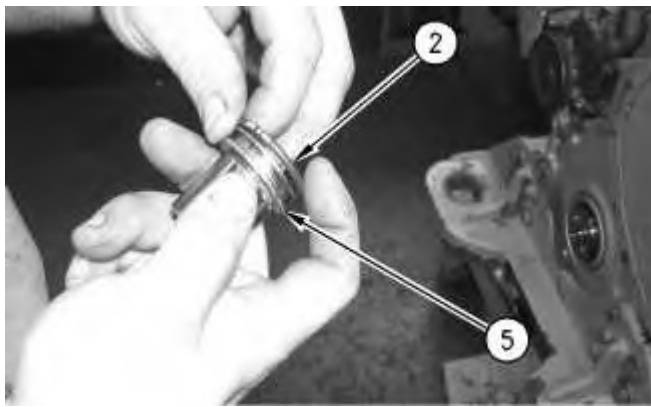


Illustration 2

g00672733

2. Apply lubricant to the new O-ring seal (2). Install new O-ring seal (2) on the tube assembly (5).

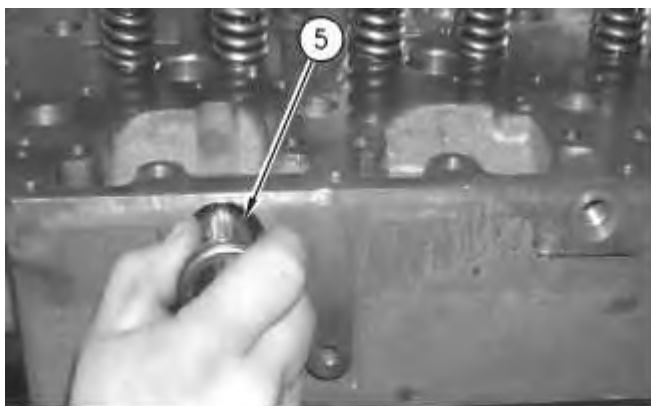


Illustration 3

g00672742

3. Install the O-ring seal and tube assembly (5) in the cylinder head.
-

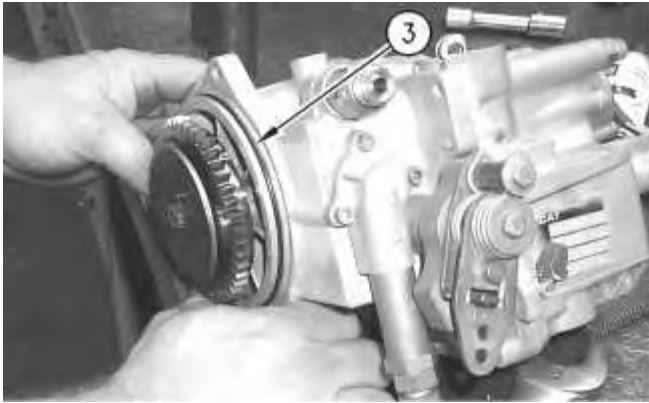


Illustration 4

g00673180

4. Apply lubricant to the new O-ring seal (3). Install new O-ring seal (3) on the governor.



Illustration 5

g00673182

5. Place the governor in position on the engine.

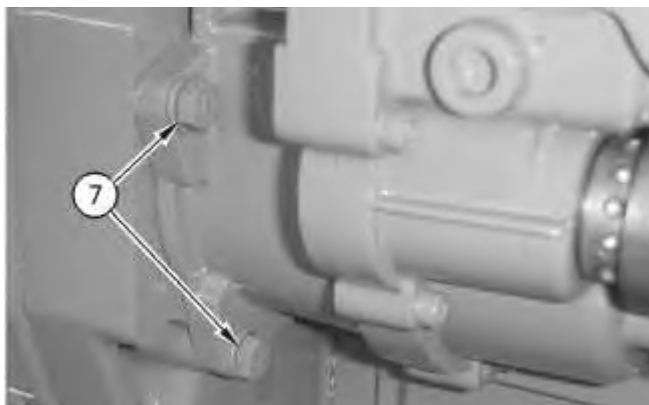


Illustration 6

g00613563

6. Install the washers and bolts (7) that hold the governor in place.

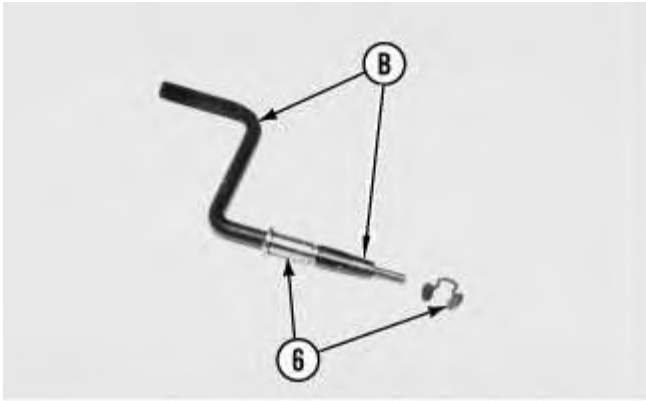


Illustration 7

g00672755

7. Install clevis pin (6) in Tooling (B).

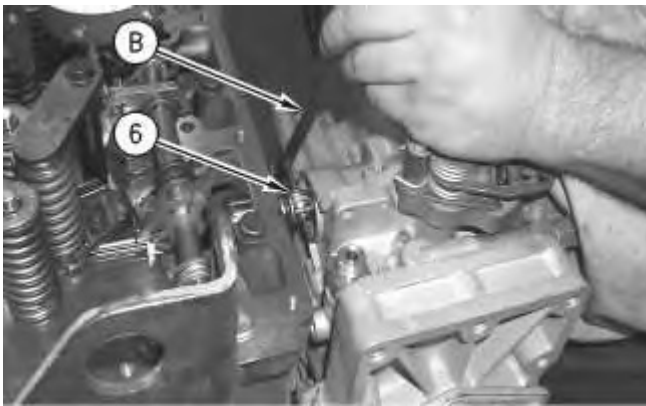
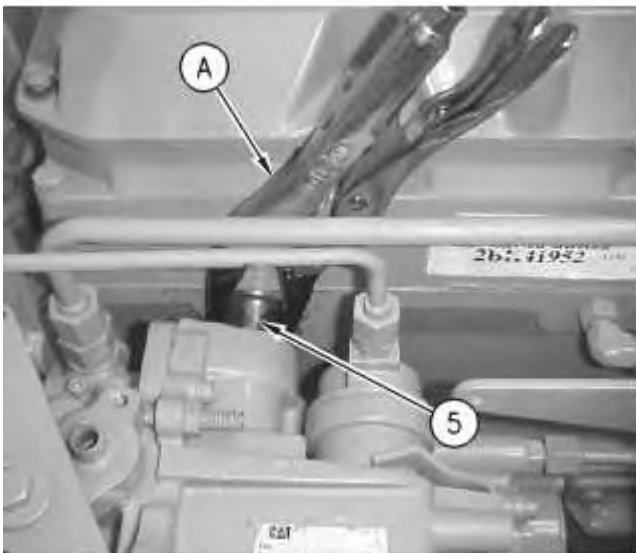


Illustration 8

g00672752

8. Use Tooling (B) to install clevis pin (6) and the clip.
9. Check the fuel setting adjustment. Refer to Testing and Adjusting, SENR5118.



10. Use Tooling (A) to slide tube assembly (5) into the governor.



Illustration 10

g00613071

11. Install clip (4).

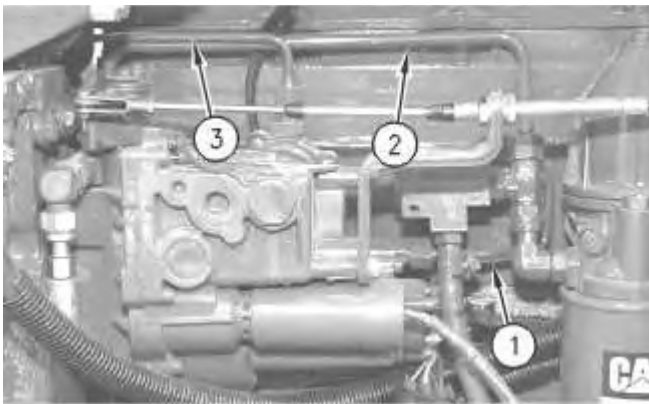


Illustration 11

g00613041

12. Install oil tube assembly (1). Install tube assembly (2) and tube assembly for fuel ratio control (3), if equipped. Plug and cap all connections.
13. Install the governor control cable.

End By:

- a. Install the fuel shutoff solenoid. Refer to Disassembly and Assembly, "Fuel Shutoff Solenoid - Remove and Install".
-

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i01928445

Fuel Injection Control Linkage - Remove

SMCS - 1298-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	136-4149	Governor Pliers	1

Start By:

- a. Remove the rocker shaft and the pushrods. Refer to Disassembly and Assembly, "Rocker Shaft and Pushrod - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



Illustration 1

g00613071

1. Remove clip (4). Clip (4) is located between the governor and the cylinder head.

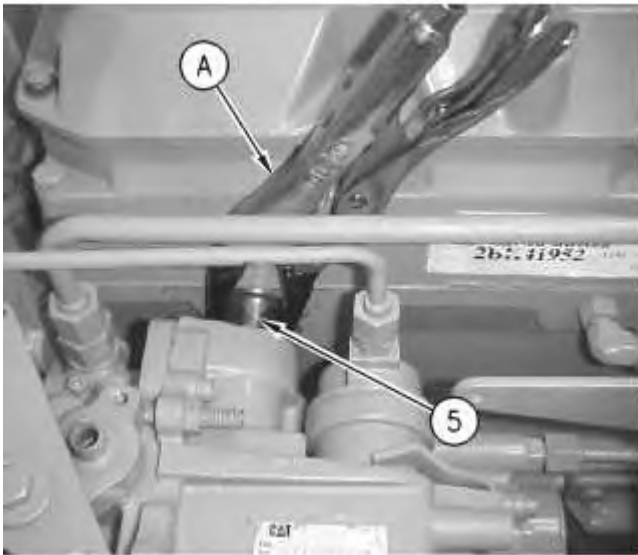


Illustration 2

g00655975

2. Use Tooling (A) to slide tube assembly (5) into the cylinder head.



Illustration 3

g00613149

3. Remove the clip and use Tooling (A) to remove the clevis pin (6). Clevis pin (6) connects the governor to the control lever of the fuel injection control linkage.

Note: Clevis pin (6) must stay with the governor in order to be adjusted.

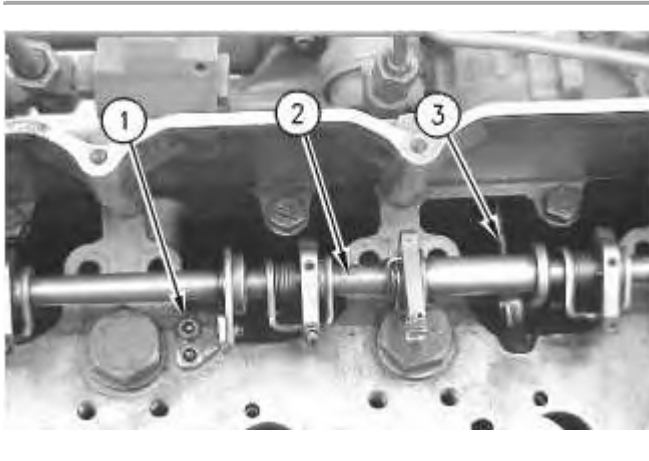


Illustration 4

g00630566

4. Remove bolts (1) and remove fuel injection control linkage (2). Control lever (3) connects the fuel injection control linkage (2) to the governor.

Note: For information on the inspection procedure for control lever (3), refer to Special Instruction, REHS0601, "Inspection and Modification of the 102-7459 Fuel Injection Control Linkage and the 4P-9048 Fuel Injection Control Linkage".

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i01928573

Fuel Injection Control Linkage - Install

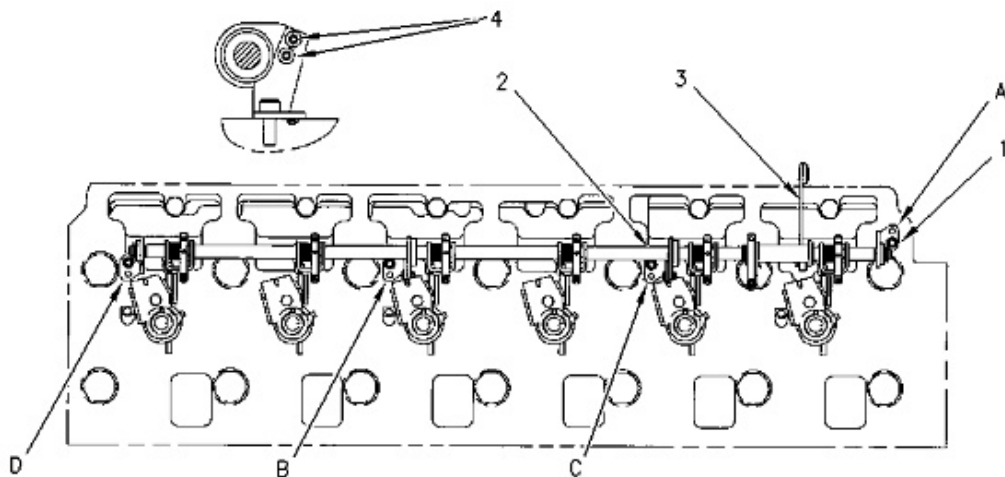
SMCS - 1298-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	136-4149	Governor Pliers ⁽¹⁾	1
B	128-8827	Pin ⁽¹⁾	1
	1U-7523	Pin Pilot ⁽¹⁾	1
C	1U-6675	Spring Compressor ⁽¹⁾	6
D	128-8822	Fuel System and Governor Tool Gp	1

⁽¹⁾ This tool is part of the **128-8822** Governor Tool Group.



Note: For information on the inspection procedure for control lever (3), refer to Special Instruction, REHS0601, "Inspection and Modification of the 102-7459 Fuel Injection Control Linkage and the 4P-9048 Fuel Injection Control Linkage".

1. Loosen setscrews (4) on each bracket.
2. Install fuel control linkage (2) and install bolts (1). Use the following sequence in order to tighten the bolts.
3. Tighten bracket (A) and (D) to a torque of $12 \pm 3 \text{ N}\cdot\text{m}$ ($106 \pm 27 \text{ lb in}$).
4. Tighten brackets (B) and (C) to a torque of $12 \pm 3 \text{ N}\cdot\text{m}$ ($106 \pm 27 \text{ lb in}$).
5. Position brackets (B) and (C) in order to allow free rotation of the fuel control rod.
6. Use a 2.5 mm (0.10 inch) wrench to tighten setscrews (4). Tighten the setscrews to a torque of $3.5 \pm 0.2 \text{ N}\cdot\text{m}$ ($31 \pm 2 \text{ lb in}$). Do not overtighten the setscrews. Ensure that the control rod rotates freely.
7. The control rod should rotate freely when a force of 4.4 N (1 lb) or less is applied to control lever (3).

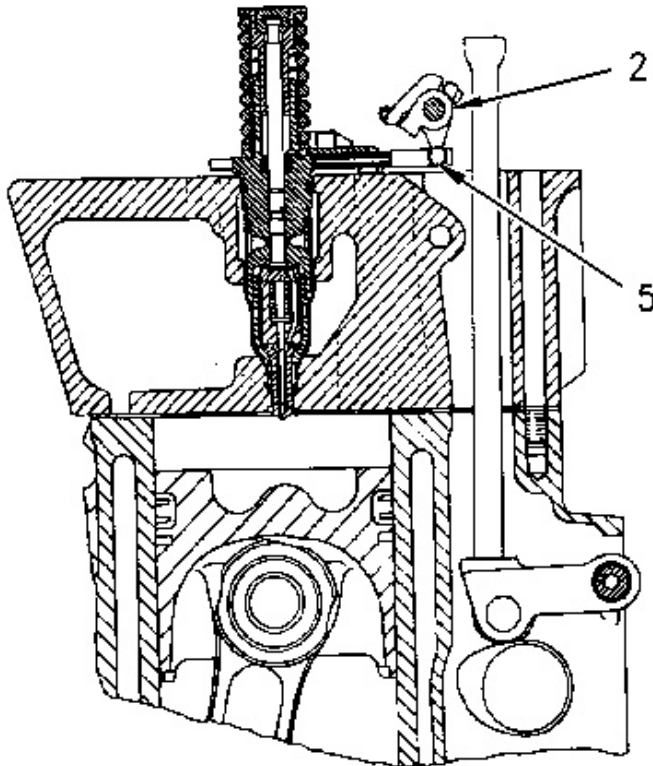


Illustration 2

g00750163

8. Rotate the unit injectors in order to engage the injector rack bar (5) with the fuel injection control linkage (2).

Note: If the unit injectors are not installed, refer to the Disassembly and Assembly, "Unit Injector - Install".

9. Install Tooling (C) on the unit injectors and compress the springs.

Note: For the procedure to install Tooling (C), refer to Tool Operating Manual, NEHS0610, "Using the 128-8822 Tool Group on 3114, 3116, and 3126 Engines with Mechanical Unit Injectors (MUI)".

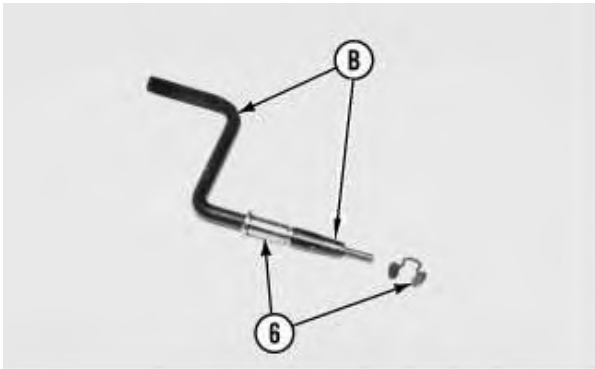


Illustration 3

g00672755

10. Install clevis pin (6) in Tooling (B). Clevis pin (6) attaches the control lever (3) to the governor.

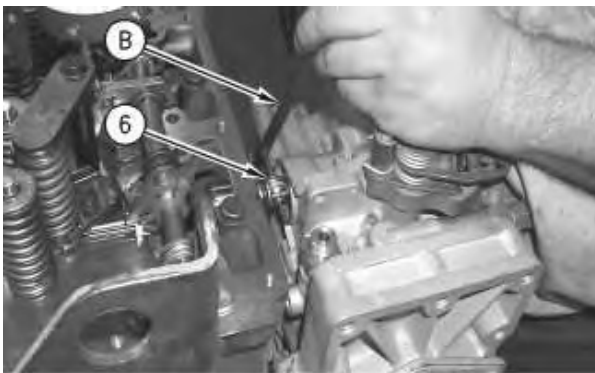


Illustration 4

g00672752

11. Use Tooling (B) to install clevis pin (6) and the clip.
12. Use Tooling (D) to set the unit injector synchronization.

Note: For the procedure to use Tooling (D), refer to Tool Operating Manual, NEHS0610, "Using the 128-8822 Tool Group on 3114, 3116, and 3126 Engines with Mechanical Unit Injectors (MUI)".

13. Remove Tooling (C) from the unit injectors.
-

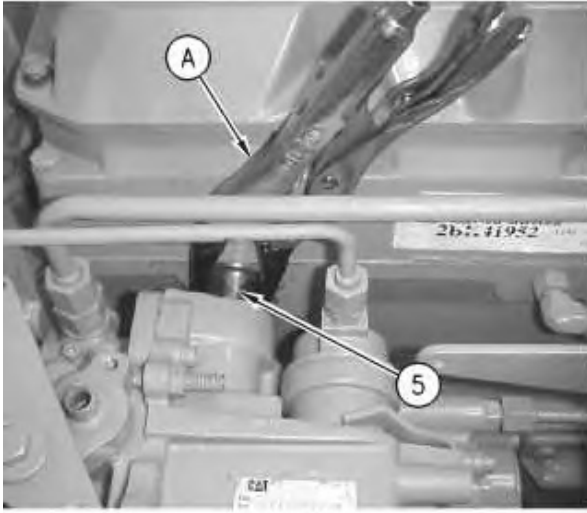


Illustration 5

g00655975

14. Use Tooling (A) to slide tube assembly (5) into the governor.



Illustration 6

g00613071

15. Install clip (4).

End By:

- a. Install the rocker arm assemblies and the pushrods. Refer to Disassembly and Assembly, "Rocker Shaft and Pushrod - Install".
-

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Media Number -SEN3611-18

Publication Date -01/05/2009

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i01928788

Exhaust Manifold - Remove and Install

SMCS - 1059-010

Removal Procedure

Start By:

- a. Remove the turbocharger. Refer to Disassembly and Assembly, "Turbocharger - Remove".

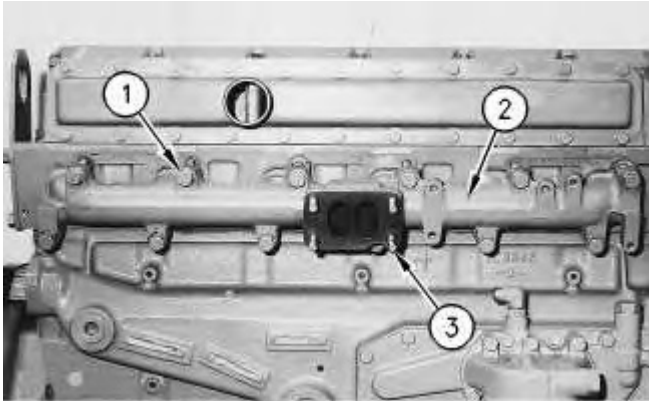


Illustration 1

g00652578

Typical example

1. Remove bolts (1), exhaust manifold (2), locks and the gaskets from the cylinder head assembly.
2. If the engine is equipped with a three-piece exhaust manifold, disassemble exhaust manifold (2) into three pieces.
3. Remove mounting studs (3) from exhaust manifold (2), if necessary.

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5P-3931	Anti-Seize Compound	1
B	2P-2333	High Temperature Sealer	1

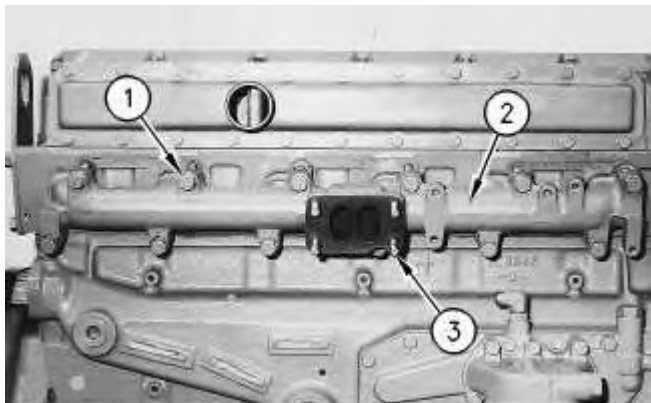


Illustration 2

g00652578

Typical example

1. Apply Tooling (A) to the threads of mounting studs (3).
2. Install mounting studs (3). Tighten mounting studs (3) to a torque of 35 ± 5 N·m (26 ± 4 lb ft).
3. If the engine is equipped with a three-piece exhaust manifold, apply a thin coat of Tooling (B) to the male ends of exhaust manifold (2). Coat the inside of the female ends of exhaust manifold (2) with clean engine oil. Assemble exhaust manifold (2) and remove the excess sealant from the joints.
4. Install new exhaust manifold gaskets.
5. Apply Tooling (A) to the threads of bolts (1). Position the gaskets and exhaust manifold (2) on the cylinder head assembly. Install locks and bolts (1).

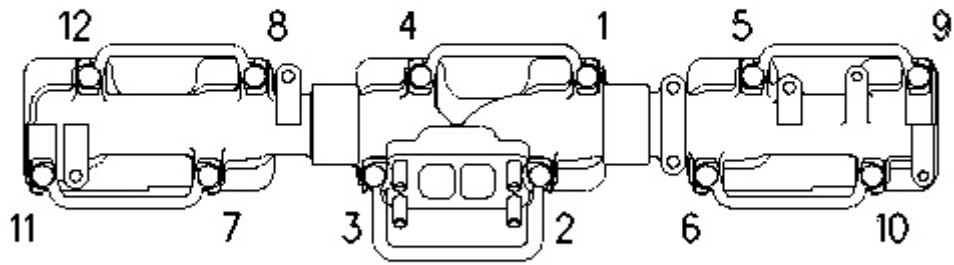


Illustration 3

g00617739

Typical example of a three-piece exhaust manifold

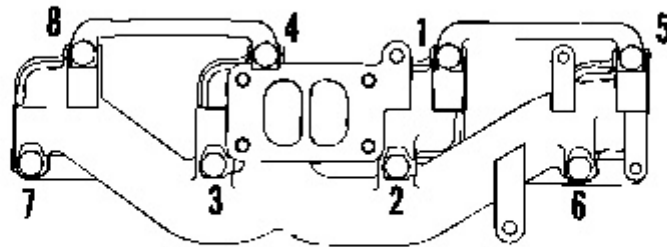


Illustration 4

g00641026

Exhaust manifold for a Four cylinder engine

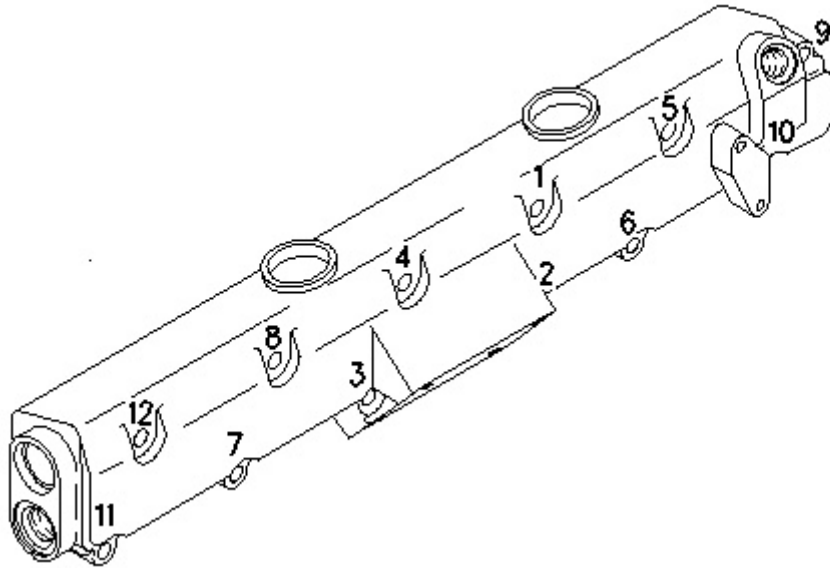


Illustration 5

g00641092

Water cooled exhaust manifold

6. Tighten bolts (1) in a numerical sequence to a torque of 4 ± 1 N·m (35 ± 9 lb in).
7. Tighten bolts (1) in a numerical sequence to a torque of 45 ± 5 N·m (33 ± 4 lb ft).

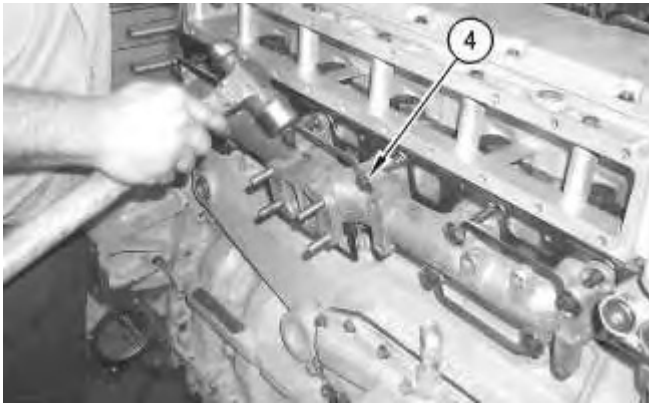


Illustration 6

g00675760

Typical example of locking tabs

8. Bend the locking tabs (4) over the flat of each bolt head.

End By:

- a. Install the turbocharger. Refer to Disassembly and Assembly, "Turbocharger - Install".

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i01328419

Inlet Manifold - Remove

SMCS - 1058-011

Removal Procedure

Start By:

- a. Remove the valve mechanism cover. Refer to Disassembly and Assembly, "Valve Mechanism Cover - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

1. Disconnect air inlet piping from the turbocharger to the aftercooler, if necessary.

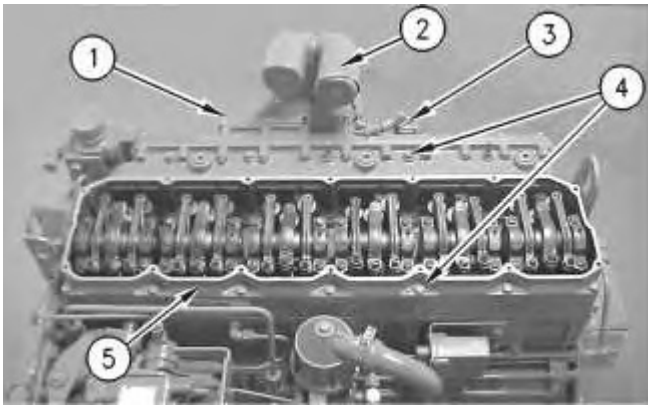


Illustration 1

g00629952

2. Remove bolts (1) and disconnect air inlet heater solenoid (3).
 3. Remove air inlet elbows (2) from air inlet manifold (5).
 4. Remove bolts (4) from air inlet manifold (5).
 5. Remove air inlet manifold (5) and the gasket.
-

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i01414226

Inlet Manifold - Install

SMCS - 1058-012

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.



Illustration 1

g00675794

1. Install a new gasket (6) on the cylinder head.

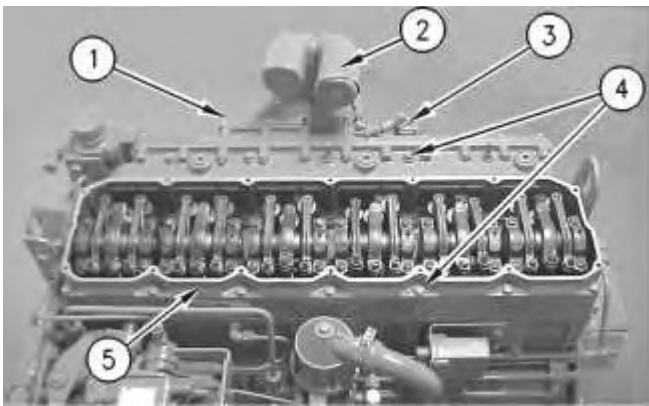


Illustration 2

g00629952

2. Position the air inlet manifold (5) on the engine.
3. Install bolts (4). Tighten the bolts to a torque of $28 \pm 7 \text{ N}\cdot\text{m}$ ($21 \pm 5 \text{ lb ft}$).
4. Install air inlet elbows (2) on air inlet manifold (5).
5. Install bolts (1) and connect air inlet heater solenoid (3).

End By:

- a. Install the valve mechanism cover. Refer to Disassembly and Assembly, "Valve Mechanism Cover - Remove and Install".
-

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i01943334

Inlet and Exhaust Valves - Remove and Install

SMCS - 1105-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

Start By:

- Remove the cylinder head assembly. Refer to Disassembly and Assembly, "Cylinder Head - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: For information on the reusability of the inlet valves, the exhaust valves and the springs, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8002, "Valves, Valve Springs, Valve Rotators, and Locks", Guideline For Reusable Parts And Salvage Operations, SEBF8034, "Valve and Valve Spring Specifications", and Guideline For Reusable Parts And Salvage Operations, SEBF8162, "Specifications to Measure and Salvage Cylinder Head Assemblies and Related Components".

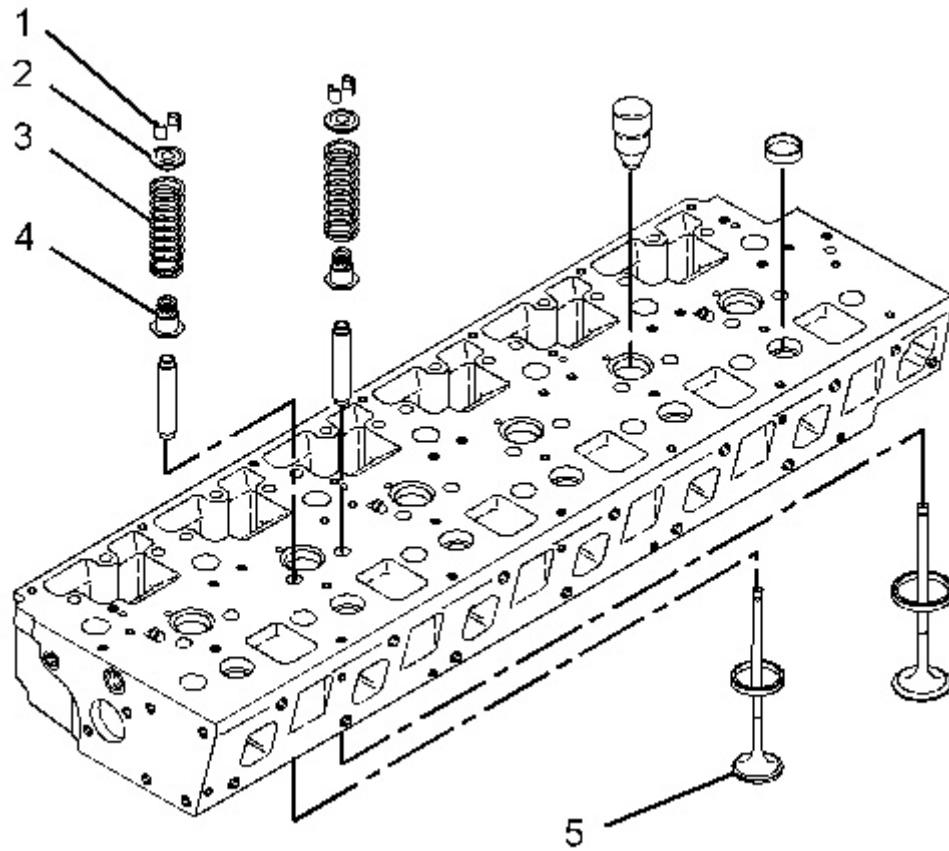


Illustration 1

g01011225

Note: The following components of the exhaust valves are different from the components of the inlet valves: spring retainer (2), valve spring (3) and valve (5).

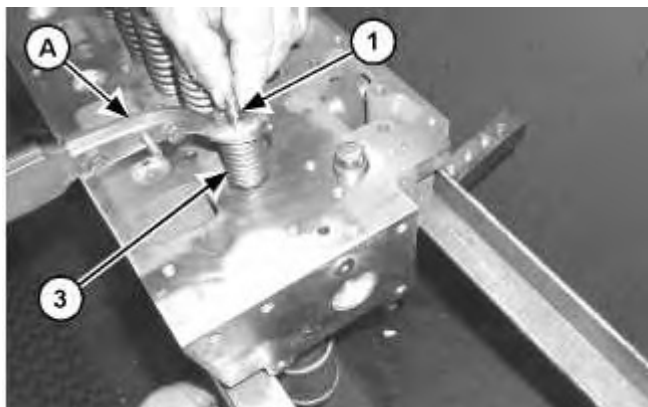


Illustration 2

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1. Use Tooling (A) to compress valve spring (3). Remove retainer lock (1).
2. Remove Tooling (A).
3. Remove spring retainer (2). Remove valve spring (3).

4. Remove valve seal (4) and valve (5).
5. Repeat Steps 1 through 4 in order to remove the remaining inlet valves and exhaust valves.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: For information on the reusability of the inlet valves, the exhaust valves and the springs, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8002, "Valves, Valve Springs, Valve Rotators, and Locks", Guideline For Reusable Parts And Salvage Operations, SEBF8034, "Valve and Valve Spring Specifications", and Guideline For Reusable Parts And Salvage Operations, SEBF8162, "Specifications to Measure and Salvage Cylinder Head Assemblies and Related Components".

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